

## Six new species of mollusks (Gastropoda: Cerithioidea, Buccinoidea, Muricoidea) from Bahía de Campeche, southwestern Gulf of Mexico

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**KEYWORDS.** Gastropoda, Turritellidae, *Turritella*, Buccinidae, *Monostiolum*, Muricidae, *Calotrophon*, Columbellidae, *Cosmioconcha*, Marginellidae, *Dentimargo*, *Canalispira*, Gulf of Mexico, Campeche.

**ABSTRACT.** Six new gastropod species dredged in Bahía de Campeche, southwestern Gulf of Mexico, are described: *Turritella lyonsi*, *Monostiolum harryleei*, *Cosmioconcha geigeri*, *Calotrophon hystrix*, *Dentimargo gibbus*, and *Canalispira aurea*. They are compared with their congeners.

### INTRODUCTION

The molluscan fauna of shallow water areas off the Mexican State of Campeche has been studied by Rice & Kornicker (1962), García-Cubas (1982) and Vokes & Vokes (1983); however, the mollusks from deeper water have received little attention from American or Mexican malacologists alike despite the numerous Mexican fishing vessels that have worked the area since the mid 1970's.

From the early 1950's to the mid 1970's the Mexican government allowed United States shrimp boat operations in their territorial waters (see García, 1989), as Mexican shrimping operations were all but non-existent at that time. Although the area was rich in mollusks, and a number of endemic, undescribed species came to light (Rehder & Abbott, 1951) (Bullis, 1956), the only comprehensive publication of deep water mollusks from the southern Gulf of Mexico was that of Kornicker & Kornicker (1965). Therefore, it is not surprising that the new species treated in this study have come to light, considering the mediterranean location of the Gulf of Mexico and its still more isolated southwestern corner, which would encourage speciation, as well as the four decades of neglect of the deeper water molluscan fauna in that area.

In 2005 the Mexican government granted a rare permit to researchers in the Biology Department at the University of Louisiana at Lafayette to collect marine specimens in the offshore Campeche Banks from June 6 to June 21, 2005. The R/V "Pelican", a vessel belonging to the Louisiana Universities Marine Consortium, was used for the project.

The 116 dredging hauls, with 25 hours of actual dredging, produced 444 species belonging to 88 families. Most species, including those herein described, were obtained after sifting the dredged sediment first through a 1/4" mesh and then through a 1/16" screen.

The new species reported in this paper were dredged between 20°46'N to 22°22'N and 90°35'W to 92°25'W; at a depth of between 28 and 108 m. The top of the shallower banks, composed of rubble, were rich in decapods, algae, soft coral, and live, common species of mollusks; however, it was the soft bottom, usually in deeper water, that produced most of the new species: *Turritella lyonsi* n. sp., *Calotrophon hystrix* n. sp., *Cosmioconcha geigeri* n. sp., *Dentimargo gibbus* n. sp., and *Canalispira aurea* n. sp. Only *Monostiolum harryleei* n. sp. and a specimen of *Calotrophon hystrix* were collected in rubble. All specimens were collected as empty shells.

The National Science Foundation provided funds for this campaign, the second such a trip in the Gulf of Mexico. Collecting data reflects the provenance of the material described herein with the use of "NSF.II" before station numbers.

The terminology used here to describe the spiral cord and apertural denticle morphology in Muricidae is based on the standard terminology established by Merle (1999, 2001).

### Abbreviations

ANSP: Academy of Natural Sciences, Philadelphia, Pennsylvania, USA.

BMSM: Bailey-Matthews Shell Museum, Sanibel, Florida, USA.

FSBC: Florida Department of Natural Resources, St. Petersburg, Florida, USA.

LACM: Los Angeles County Museum, Los Angeles, California, USA.

NSF: National Science Foundation, Arlington, Virginia, USA

SBMNH: Santa Barbara Museum of natural History, Santa Barbara, California, USA.

UF: University of Florida, Florida Museum of Natural History, Gainesville, Florida, USA.

UNAM: Universidad Nacional Autónoma de México, México DF.

USNM: National Museum of Natural History, Smithsonian Institution, Washington, DC, USA.

EFG: author's collection

dd: empty shell

P: Primary cord.

s: secondary cord.

IP: Infrasutural primary cord (shoulder).

adis: adapical infrasutural secondary cord (shoulder)

abis: abapical infrasutural secondary cord (shoulder)

P1: Shoulder cord.

P2-P6: Primary cords on the convex part of the teleoconch whorl.

s6: secondary cords on the convex part of the teleoconch whorl.

ID: Infrasutural denticle

D1-D6: Abapical denticles

## SYSTEMATICS

Superfamily **CERITHIOIDEA** Fleming, 1822

Family **TURRITELLIDAE** Lovén, 1847

Subfamily **TURRITELLINAE** Lovén, 1847

Genus *Turritella* Lamarck, 1799

Type species: *Turbo terebra* Linné, 1758 by original designation.

### *Turritella lyonsi* n. sp.

Figs 1-4

**Type material.** Holotype ANSP 413501; length 17.8 mm, width 5.7 mm (Figs 1-4), 1 paratype ANSP 413502, 5 paratypes UNAM, 2 paratypes USNM 1090210, 2 paratypes BSM 26447, 2 paratypes Harry G. Lee coll., 2 paratypes UF 378846, 2 paratypes LACM 3072, 2 paratypes SBMNH 369021, 2 paratypes FSBC 1 66865, 26 paratypes EFG 25811.

**Type locality.** Mexico, Bahía de Campeche, 20°46.97'N, 91°55.86'W, 28-48 m.

**Material examined.** Known only from the type material.

**Distribution.** Bahía de Campeche, southwestern Gulf of Mexico, 28-48 m.

**Description.** Holotype 17.8 mm in length (Figs 1-4), light in weight, turreted (width/ length ratio 0.32). Protoconch of about two whorls (Fig. 4); first whorl

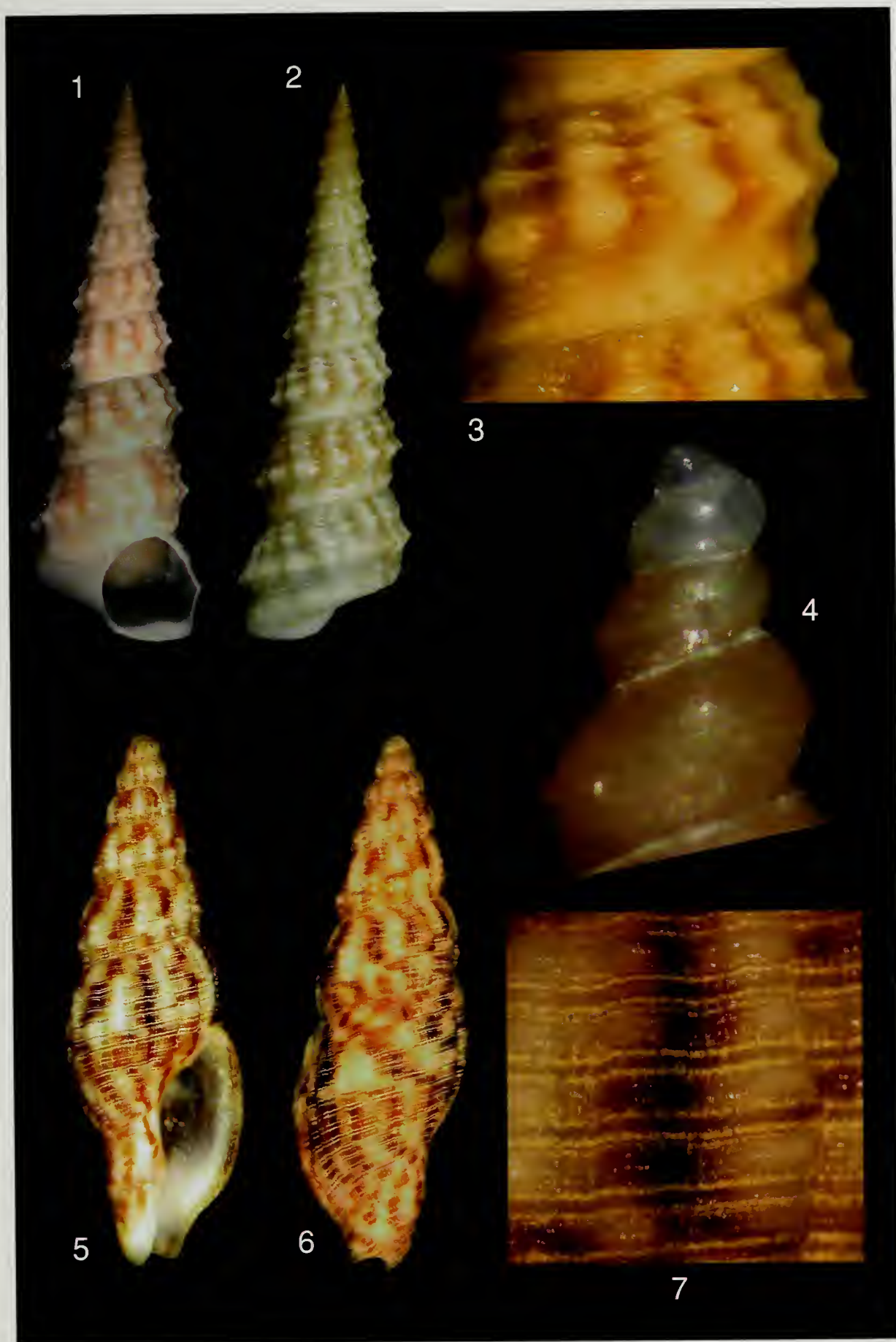
pointed; second whorl bulbous, translucent-white, becoming yellowish-tan towards end of second whorl; transition between protoconch and teleoconch inconspicuous, delineated by the appearance of spiral elements. Teleoconch of 11 whorls; early whorls carinated (Fig. 4); carina becoming less conspicuous on later whorls. Suture channeled (Fig. 3). Axial sculpture absent on first five whorls, starting to develop on sixth whorl, as nodes on two spiral cords on shoulder, and at carina, begin to align axially; following whorls with increasingly strong, nodulose axial ribs, about 12 on penultimate whorl; microscopic axial lines covering surface of later whorls. Spiral sculpture of first teleoconch whorl of one strong central cord with a spiral thread on either side (Fig. 4); central cord creating a narrow, sharp carina on first five whorls; spiral threads increasing in number on later whorls; carina and two shoulder threads becoming increasingly nodulose; nodules elongated, axially aligned, increasing in size anteriorly (Fig. 3); pre-sutural thread rapidly increasing in strength, becoming a cord on later whorls, giving anterior half of whorls a concave profile (Fig. 3), creating a channel at suture. Base of shell concave, delineated posteriorly by a basal ridge, a continuation of the pre-sutural cord; base sculptured with minute, arcuate axial lines and slightly stronger spiral thread. Aperture anteriorly quadrate, roundly pointed posteriorly. Color yellowish tan on first five whorls, becoming lighter in color on later whorls, brown markings showing between axial ribs as ribs begin to appear.

**Discussion.** The largest specimen of *Turritella lyonsi* measures only 20 mm in length. Its small size and nodulose structure separate it from most western Atlantic species. *Turritella yucatecana* Dall, 1881, and some populations of *Turritella acropora* Dall, 1889, are as small; however, these two species are not nodulose. The more nodulose forms of *Turritella bicingulata* Lamarck, 1822, an eastern Atlantic species, resemble the new species, but *T. bicingulata* is twice as large and has different ornamentation. The eastern Pacific *Turritella nodulosa* King & Broderip, 1832, is larger, heavier, has a different ornamentation, and is irregularly marked with brown blotches.

**Etymology.** Named for William G. Lyons, of St. Petersburg, Florida, formerly with the State of Florida Department of Natural Resources, for his contributions to the molluscan fauna of the Gulf of Mexico.

## Figures 1-7

**1-4.** *Turritella lyonsi* n. sp. Mexico, Bahía de Campeche, 20°46.97'N, 91°55.86'W, 28-48 m. Holotype ANSP 413501, 17.9 x 5.7 mm. **5-7.** *Monostiolum harryleei* n. sp., Mexico, Bahía de Campeche, 22°16.08'N, 90°42.89'W, 54-56 m. Holotype ANSP 413503, 18.9 x 6.2 mm.





Superfamily **BUCCINOIDEA** Rafinesque, 1815

Family **BUCCINIDAE** Rafinesque, 1815

Subfamily **PISANIINAE** Gray, 1857

Genus *Monostiolium* Dall, 1904

Type species: *Triton swifti* Tryon, 1881, by original designation.

***Monostiolium harryleei* n. sp.**

Figs 5-7

**Type material.** Holotype ANSP 413503; length 18.9 mm, width 6.2 mm (Figs 5-7). 1 paratype, EFG 25796.

**Type locality.** Mexico, Bahía de Campeche, 22°16.08'N, 90°42.89'W, 54-56 m.

**Material examined.** Mexico. 22°16.08'N, 90°42.89'W, 54-56 m, 1 dd (holotype). 22°16.45'N, 90°39.83'W, 53-55 m, 1 dd (paratype).

**Distribution.** Bahía de Campeche, southwestern Gulf of Mexico, 53-56 m.

**Description.** Holotype 18.9 mm in length, strong, fusiform (width / length ratio 0.33) (Figs 5-7). Protoconch missing. Early teleoconch whorls missing, remaining 6 1/2 whorls moderately convex. Suture deep, incised. Axial sculpture of strong, rounded, wide ribs; first available whorl with 10 ribs; ribs diminishing in strength, gradually increasing to 15 on penultimate whorl, almost evanescent near aperture on last whorl; numerous hair-like incised axial lines covering surface of shell (Fig. 7), more conspicuous in incised line that separates spiral sculpture. Spiral sculpture of early whorls of strong, rounded cords; cords becoming flatter on later whorls; 5 unequal cords on first available whorl, creating spirally elongated nodes when crossing over axial ribs, increasing in number when secondary, alternating cords begin to appear on later whorls; secondary cords about half as wide as primary cords; penultimate whorl with 8 primary and 8 secondary cords; thin, tertiary threads irregularly appearing on last half of

last whorl; cords and threads separated by incised groove (Fig. 7). Labrum thin at edge, strengthened behind by wide, round varix; surface of varix sculptured with same axial and spiral elements as rest of whorl; inside labrum showing 9 weak, even-sized denticles. Aperture 8.7 mm in length, elongated, conspicuously narrowing anteriorly to form anterior canal; posterior canal delimited parietally by small, blunt denticle; columella recurved, glazed; anterior canal 3.6 mm in length, delimited parietally by a sharp denticle. Color ivory, profusely marked with dark-brown tessellations.

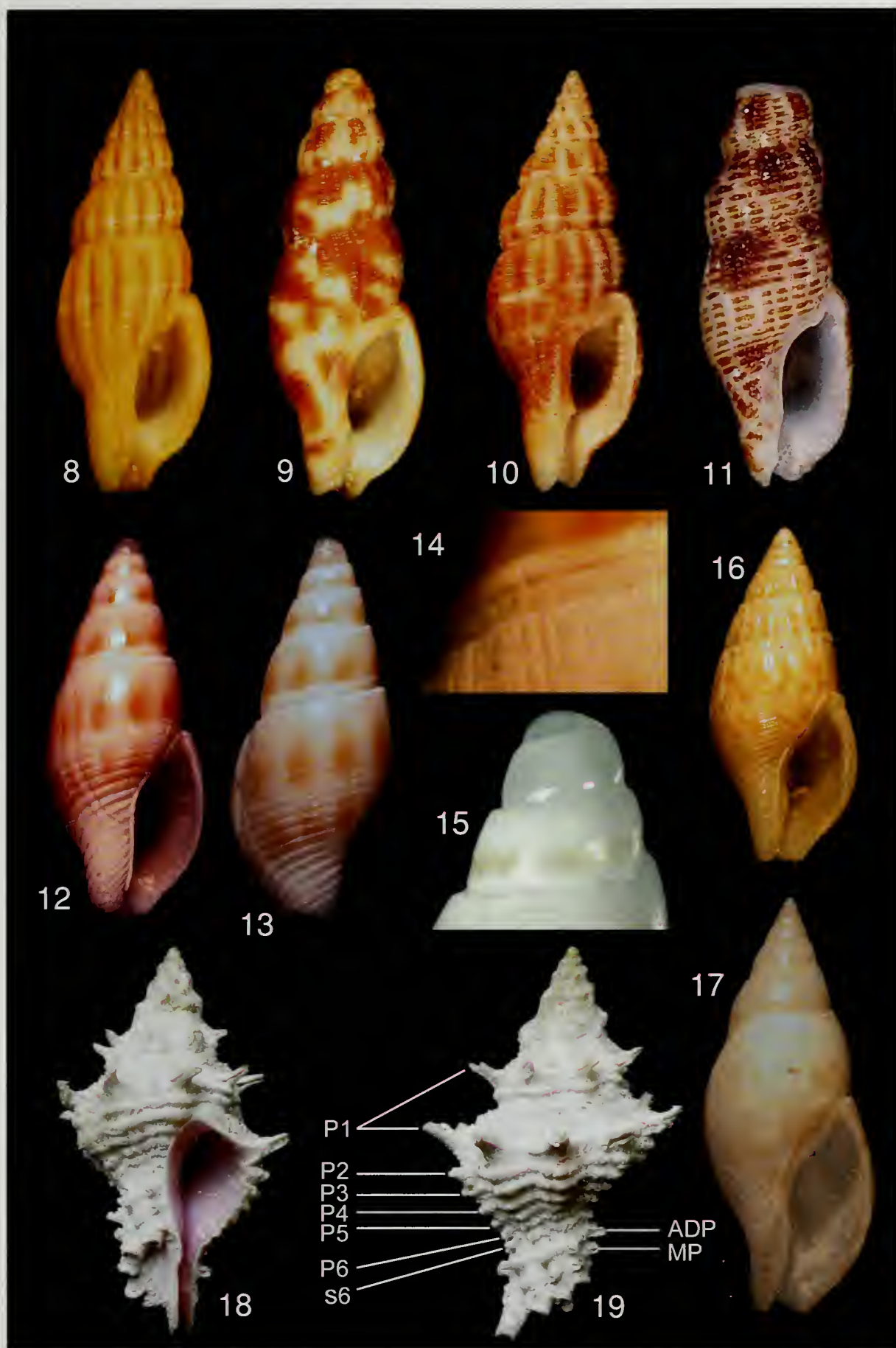
**Discussion.** There are four recognized species of *Monostiolium* in the western Atlantic: *M. atlanticum* (Coelho, Matthews & Cardoso, 1970) (Fig. 11), *M. auratum* Watters & Finlay, 1989 (Fig. 8), *M. rosewateri* Watters & Finlay, 1989 (Fig. 10), and *M. tessellatum* (Reeve, 1844) (Fig. 9). None of these has ever been reported from the Gulf of Mexico, and all, except *M. tessellatum*, have been reported only from oceanic islands.

*Monostiolium auratum* (Fig. 8) is more fusiform; is golden orange in coloration, with two white spiral bands and dark-brown between some of the axial ribs; and has approximately 18 axial ribs on the penultimate whorl with regularly spaced spiral cord.

*Monostiolium tessellatum* (Fig. 9) is the most similar to the new species. It is also the most variable and the most widely distributed (see Watters & Finlay, 1989: 50-51, figs 1 & 2), having been reported from Bermuda to Brazil, and always from oceanic islands with the exception of one Brazilian report (Watters & Finlay, 1989: 50). Some forms of *M. tessellatum* have the general appearance and markings of the new species; however *M. tessellatum* has more numerous, more rounded, regularly spaced spiral cords, and lacks the incised groove of *M. harryleei*. The maximum recorded size for *M. tessellatum* is 18 mm (Watters & Finlay, 1989: 49), while the holotype of the new species measures 18.9 mm in length, lacking the protoconch and at least one teleoconch whorl.

## Figures 8-19

8. *Monostiolium auratum* Watters & Finlay, 1989, near La Parguera, SW Puerto Rico, 17°57'N, 67°04'W, 2 m, 16.1 mm, EFG 19409. 9. *Monostiolium tessellatum* (Reeve, 1844), "The Reef", Southampton Pt., Bermuda, 32°14'N, 64°46'W, 0 m, 15.2 mm, H. G. Lee coll. 10. *Monostiolium rosewateri* Watters & Finlay, 1989, W. Hometown, St. James, Barbados, 13°11'N, 59°39'W, 160-200 m, 17.7 mm, H. G. Lee coll. 11. *Monostiolium atlanticum* (Coelho, Matthews & Cardoso, 1970), off Rio do Fogo, Rio Grande do Norte State, Brazil, 20-25 m, 15 mm, Marcus Coltro, "Femorale" coll. 12-15. *Cosmioconcha geigeri* n. sp., Mexico, Bahía de Campeche, 22°16.28'N, 91°30.42'W, 107-108 m. Holotype ANSP 413504, 5.8 mm x 2.5 mm. 16. *Cosmioconcha rikae* Monsecour & Monsecour, 2006, off Mobile, Alabama, 29°31'N, 87°22.75'W, 165 m, 7.1 mm, EFG 14444. 17. *Cosmioconcha nitens* (C. B. Adams, 1850), off Gibara, Holguin Province, Cuba, 21°30'N, 76°10'W, 120 m, 13.2 mm, EFG 9239. 18-19. *Calotrophon hystrix* n. sp., Mexico, Bahía de Campeche, 22°22.82'N, 90°34.50'W, 73-77 m. Holotype ANSP 413505, 28.8 x 14.7 mm (without spines).





*Monostiolum rosewateri* (Fig. 10) has different coloration than the new species, is wider in proportion (width/length 0.38), has a spiral sculpture of rounded, regularly spaced cords, has only 10 to 12 axial ribs on the penultimate whorl, has a prominent, pointed parietal tooth and a thick labral tooth to delineate the anterior canal, and has an erect callus on the parietal wall.

*Monostiolum atlanticum* (Fig. 11), known only from Brazilian waters, has a different pattern, grows to only 15 mm, has fewer whorls, rounded spiral cords, and a wider, shorter anterior canal.

**Etymology.** Named for Harry G. Lee, M. D., of Jacksonville, Florida, a loyal friend and co-author in several publications.

Family **COLUMBELLIDAE** Swainson, 1840

Subfamily **ATILIIINAE** Cossman, 1901

Genus *Cosmioconcha* Dall, 1913

Type species: *Buccinum modestum* Powys, 1835, by original designation.

***Cosmioconcha geigeri* n. sp.**

Figs 12-15

**Type material.** Holotype ANSP 413504; length 5.8 mm, width 2.5 mm (Figs 12-15), 1 paratype UNAM, 1 paratype USNM 1090211, 2 paratypes EFG 26311.

**Type locality.** Mexico, Bahía de Campeche, 22°16.28'N, 91°30.42'W, 107 - 108 m.

**Material examined.** Mexico. NSF.II: sta. 90, 22°16.28'N, 91°30.42'W, 107- 108 m, 5 dd.

**Distribution.** Bahía de Campeche, southwestern Gulf of Mexico, 107 - 108 m.

**Description.** Holotype 5.8 mm in length, strong, fusiform (width / length ratio 0.43) (Figs 12-13). Protoconch white, glassy, paucispiral, of about 1.5 whorls (Fig. 15). Teleoconch of 4, almost flat-sided whorls. Suture deep, channeled (Fig. 14). Axial sculpture of early whorls of microscopic sinuous

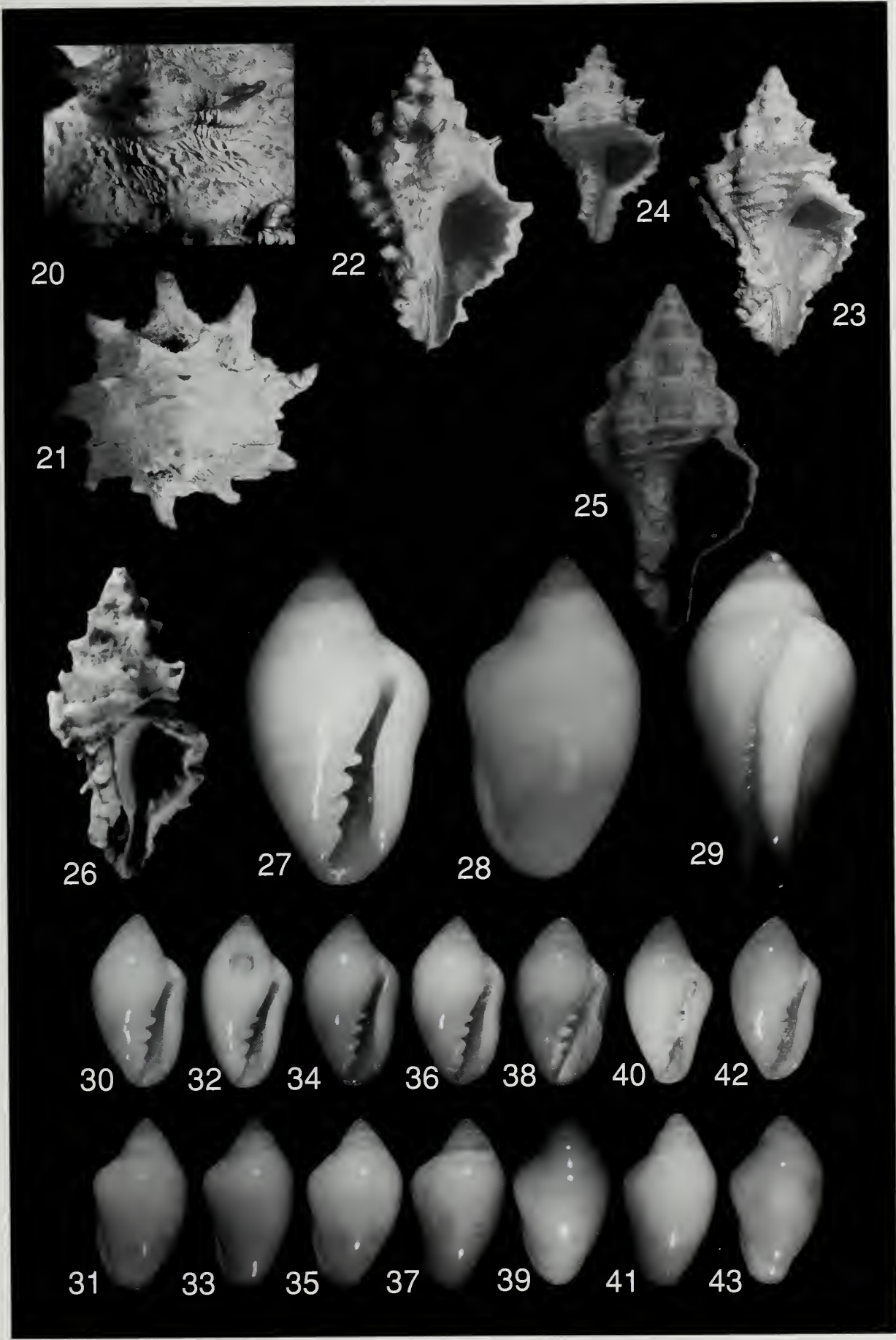
growth lines, becoming stronger on later whorls (Fig. 14). Spiral structure on early whorls of a single supra-sutural incised line (Fig. 14); last whorl showing incised line at periphery, followed anteriorly by strong spiral cords; cords wider than interspaces, slightly corrugated by axial growth lines. Outer lip strengthened behind by strong, wide varix; sculpture of last whorl continuing on surface of varix. Aperture elongate-ovate, 2.8 mm in length; inside of outer lip showing 7 weak, elongated denticles; denticles slightly increasing in strength anteriorly; parietal wall weakly erect, weakly wrinkled where crossing over spiral ornamentation of last whorl, showing swollen denticle at beginning of anterior canal. Anterior canal short, wide. Shell color creamy-white; a band of squarish, light orange spots showing at anterior half of apical whorls, followed anteriorly by a well-defined milky-white band, white color spilling over other side of suture (Fig. 14); band of spots continuing at periphery of last whorl; a second band of spots showing on last whorl anterior to periphery.

**Discussion.** There are six columbellid taxa from the western Atlantic that have been assigned to *Cosmioconcha*: *C. nitens* (C. B. Adams, 1850), *C. calliglypta* (Dall & Simpson, 1901), *C. helenae* (Costa, 1983), *C. humfreyi* Jong & Coomans, 1988, *C. dedonderi* Monsecour & Monsecour, 2006, and *C. rikaie* Monsecour & Monsecour, 2006. *Cosmioconcha nitens* and *C. rikaie* have been collected in the Gulf of Mexico.

*Cosmioconcha nitens* (Fig. 17) has a multispiral protoconch, is larger, thinner, and has a proportionately longer aperture. *Cosmioconcha rikaie* (Fig. 16) has a less bulbous protoconch, is axially ribbed, and has a nodulose spiral cord anterior to the suture. *C. calliglypta*, a southern Caribbean species that has often been confused with *C. rikaie* (Monsecour & Monsecour, 2006: 10), is much more stout, and has stronger sculpture and a deeper suture. *Cosmioconcha helenae*, a Brazilian species, is larger, has 6 whorls, is axially ribbed, and is nodulose at suture. *Cosmioconcha humfreyi*, a species described from Aruba, is more delicate, with a row of white spots above the suture; is larger, and has 9 whorls.

**Figures 20-43**

**20-24.** *Calotrophon hystrix* n. sp. **20.** Holotype; close-up of sutural area and shoulder. **21.** Holotype; apical view of spire. **22.** Paratype 1, Mexico, Bahía de Campeche, 22°05.89'N, 91°22.89'W, 40-42 m, 20.6 mm, EFG 25850. **23.** Paratype 2, Florida, off Sanibel Island, "Hourglass" sta. K, 26°24'N, 82°38'W, 37 m, 23.2 mm, FSBC 1 11240. **24.** Paratype 3, Mexico, Bahía de Campeche, 20°52.40'N, 92°24.83'W, 77-81 m, 13.2 mm, ANSP 413506. **25.** *Calotrophon ostrearum* (Conrad, 1846), Isla El Cerrito, northern Yucatán Peninsula, Mexico, 0.1 m, 19.6 mm, EFG 15631. **26.** *Calotrophon andrewsi* Vokes, 1976, Mexico, Isla Mujeres, Quintana Roo State. Holotype USNM 711111, 20.0 x 11.4 mm. **27-29.** *Dentimargo gibbus* n. sp., Mexico, Bahía de Campeche, 22°16.28'N, 91°30.42'W, 107-108 m. Holotype ANSP 413507, 5.5 x 3.1 mm. **30-43.** *Dentimargo gibbus* n. sp., paratype series. Mexico, Bahía de Campeche, 22°16.28'N, 91°30.42'W, 107-108 m. **30-31.** Paratype 1 USNM 1090212, 5.9 x 3.4 mm. **32-33.** Paratype 2 UF 378847, 6 x 3.1 mm. **34-35.** Paratype 3 UNAM, 5.6 x 3.2 mm. **36-37.** Paratype 4 BMSM 26448, 5.5 x 3.1 mm. **38-39.** Paratype 5 H. G. Lee coll., 5.2 x 3 mm. **40-41.** Paratype 6 EFG 26345, 5.5 x 3.2 mm. **42-43.** Paratype 7 EFG 26345, 5.5 mm x 3.1 mm.





*Cosmioconcha dedonderi*, from the southwestern Caribbean, has a different color pattern and a cancellate sculpture.

In his dissertation on Brazilian columbellids, Costa (2005: 152-156) describes, without naming them, two species from Brazil. *Cosmioconcha* "sp. 1", with axial costae, is similar to *C. rikaie* Monsecour & Monsecour, 2006 in general shape and sculpture. *Cosmioconcha* "sp. 2" is differently colored from the new species, has wider shoulders, and has a subsutural spiral sulcus.

**Etymology.** The new species is named for Daniel L. Geiger, Ph. D., Santa Barbara Museum, for his contributions to malacology, particularly in Vetigastropoda.

Superfamily **MURICOIDEA** Rafinesque, 1815

Family **MURICIDAE** Rafinesque, 1815

Subfamily **MURICINAE** Rafinesque, 1815

Genus *Calotrophon* Hertlein & Strong, 1951

Type species: *Calotrophon bristolae* Hertlein and Strong, 1951 (= *Tritonalia turrita* Dall, 1919), by original designation.

***Calotrophon hystrix* n. sp.**

Figs 18-24, 44

**Type material.** Holotype ANSP 413505 length 28.8 mm, width 14.7 mm (without spines) (Figs 18-21), paratype 1 EFG 25850 (Fig. 22), paratype 2 FSBC 111240 (Fig. 23), paratype 3 ANSP 413506 (Figs 24, text Fig. 44), paratype 4 UNAM, paratype 5 USNM 1090209.

**Type locality.** Mexico, Bahía de Campeche, 22°22.82'N, 90°34.50'W, 73-77 m.

**Material examined.** Mexico. NSF.II: Sta. 08, 22°22.82'N, 90°34.50'W, 73-77 m, 1 dd (holotype, Figs 18-21) - Sta. 85, 22°05.89'N, 91°22.89'W, 40-42 m, 1 dd (paratype 1, Fig. 22) - Sta. 35, 20°52.40'N, 92°24.83'W, 77-81 m, 3 dd (paratype 3, Fig. 24, text Fig. 44); paratypes 4 and 5 (unfigured).

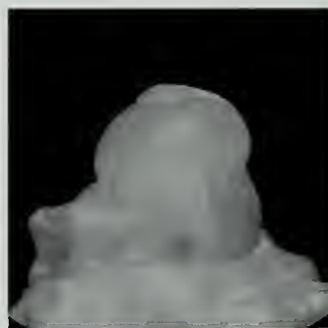
**U.S.A., Florida.** "Hourglass" sta. K, 26°24'N, 82°38'W, 37 m, 1 dd (paratype 2, Fig. 23).

**Distribution.** Off Sanibel Island, SW Florida, to Bahía de Campeche, SW Gulf of Mexico, 37 - 77 m.

**Description.** Holotype 28.8 mm in length, widely fusiform (width/length ratio 0.51) (Figs 18-21). Protoconch paucispiral, eroded. Teleoconch of 6 whorls. Suture weakly impressed, somewhat obscured by surface ornamentation (Fig. 20). Ornamentation on early whorls eroded; 8 elongate, mostly spinose axial nodes showing at periphery. Numerous erect, slanted axial imbrications appearing on shoulder slope starting on fourth whorl; 8 rounded axial varices, more

prominent at anterior half of whorls; last whorl with varices widely rounded anterior to periphery; varices wider than interspaces, narrowing anteriorly; varices and interspaces covered with numerous, erect, axially oriented imbrications. Spiral sculpture absent on shoulder slope of early whorls; 3 weak, almost indistinct peripheral cords (abis, 1P, abis) starting on fourth whorl (Fig. 20); cords corrugated by axially oriented imbrications; shoulder cord (P1) developing long, open spines at intersection with axial varices; most spines abaperturally oriented (Fig. 21). Last whorl with 6 primary and 1 secondary strongly imbricated spiral cords (P1, P2, P3, P4, P5, P6, s6); cords as wide as interspaces, progressively diminishing in width anteriorly, followed by two strongly spinose cords (ADP, MP) on anterior canal. Aperture elongate-ovate, opening into shoulder spine, becoming angular at intersection of parietal wall and shoulder. Outer lip strongly dentate; dentition corresponding to extensions of interspaces between spiral cords; two posterior denticles strongest; inner side of outer lip with 11 lirations within, corresponding to ID split, D1, D2, D3, D4 split, D5 split, D6 split. Parietal wall slightly appressed at posterior end; otherwise, erect, smooth, except for sharp node at anterior end, and weak parietal tooth at posterior end. Anterior canal dorsally recurved, almost half the length of the aperture, constricted posteriorly by node on parietal wall and the fusion of anterior lirations on outer lip. Umbilicus wide, funnel-like, bordered by six heavy scales; scales corresponding to termination of anterior canals of earlier shell growth. Eroded portion of apex showing a glassy, light-cream shell, remaining shell covered with a thin, chalky-white intritacalx. Aperture lavender within.

Protoconch of paratype 3, a juvenile (Fig. 44), composed of two whorls; first 1.5 whorls smooth, bulbous; termination of second whorl becoming less convex, sculptured with weak axial growth lines.



**Figure 44.** Protoconch of *Calotrophon hystrix* n.sp. Paratype 3, Mexico, Bahía de Campeche, 20°52.40'N, 92°24.83'W, 77-81 m, 13.2 mm, ANSP 413506.

**Discussion.** Paratype 1 (Fig. 22) is similar to the holotype in all major characters; however, it is proportionately wider (width/length ratio 0.57) at 20.6



mm in length with only 5 teleoconch whorls; the eroded portions of the last whorl show the same lavender coloration as the aperture; and there are 8 lirations within (ID split, D1, D2, D3, D4, D5, D6) instead of the 11 in the holotype. Paratype 2 (Fig. 23) has all of the characters of the holotype, other than less ornamentation because of erosion.

The genus *Calotrophon*, is represented in the Recent western Atlantic fauna by two species: *C. ostrearum* (Conrad, 1846) and *C. andrewsi* Vokes, 1976. In her monograph of the genus (1976) Vokes' interpretation of *C. ostrearum* is that of an extremely variable species. However, she also points out the ecological relationship between the non-spinose shallow water form of *C. ostrearum* (Fig. 25) and mangrove swamps (1976: 107), a relationship emphasized by the fact that no live-collected, shallow water *C. ostrearum* had been reported other than from near mangrove swamps. Vokes goes on to state that "in the Recent fauna specimens of *C. ostrearum* from deeper water (20 to 25 fathoms) exhibit rather elaborate sculpture, including scabrous axial growth lines and small spinelets on the siphonal canal (1976: 109).

Because fossil examples assigned to *Calotrophon ostrearum* often show similar ornamentation, Vokes considered the deeper-water, spinose form of the Gulf of Mexico *Calotrophon* conspecific with that taxon. However, the widely different ecological niches, and the recently collected, elaborately sculptured, specimens indicate that at least two different species are involved. Two Recent specimens pictured by Vokes as *Calotrophon ostrearum* (1976:121, pl. 5, figs 7a-7b, 11a-11b) are hereby considered to be *C. hystrix*. I have examined the specimen figured by Vokes as 11a and 11b and have made it a paratype (paratype 2) of the new species.

*Calotrophon hystrix* differs from *C. ostrearum* in being comparatively broader, more massive, in having prominent spines at the periphery of the whorls and on the anterior canal, as well as in having the surface of the shell covered with numerous erect imbrications; in having a shoulder slope free of axial sculpture; in having two, instead of three, spiral cords on apical whorls; in having a wider funnel-like umbilicus; in having an erect parietal wall, and in having a comparatively broader siphonal canal. The two taxa are also confined to two different habitats. It is suggested here that the more spinose, fossil forms formerly assigned to *C. ostrearum* may be *C. hystrix*.

*Calotrophon andrewsi* (Fig. 26) seems to be confined to the limy banks of southwest Florida and northeast Yucatán. It has the same spinose appearance of *Calotrophon hystrix*; however, its ornamentation is less elaborate; it is smaller, the largest specimen reported reaching only 20 mm at 6 whorls; has on the last whorl 3 to 5 spiral cords with intercalary threads; has spines that tend to project apically, rather than abaperturally; has a narrower umbilicus; and has a deep apricot to yellow aperture, rather than lavender.

**Etymology.** From the Greek *hystrix* (noun, meaning porcupine), referring to the "prickly" appearance of the species.

#### Family MARGINELLIDAE

Subfamily MARGINELLINAE Fleming, 1828

Genus *Dentimargo* Cossman, 1899

Type species: *Marginella dentifera* Lamarck, 1803, by original designation.

#### *Dentimargo gibbus* n. sp.

Figs 27-43

**Type material.** Holotype ANSP 413507; length 5.5 mm, width 3.1 mm (Figs 27-29), 1 paratype USNM 1090212 (paratype 1, Figs 30-31), 1 paratype UF 378847 (paratype 2, Figs 32-33), 1 paratype UNAM (paratype 3, Figs 34-35), 1 paratype BMSM 26448 (paratype 4, Figs 36-37), 1 paratype H. G. Lee col. (paratype 5, Figs 38-39), 3 paratypes EFG 26345 (paratypes 6 and 7, Figs 40-43; paratype 8, unfigured).

**Type locality.** Mexico, Bahía de Campeche, 22°16.28'N, 91°30.42'W, 107-108 m.

**Material examined.** Mexico. NSF.II: Sta. 45, 20°00.35'N; 92°26.10'W, 73-77m, 9 dd -Sta. 90, 22°16.28'N, 91°30.42'W, 108-107 m, 9 dd - Sta. 105, 22°20.00'N, 90°49.43'W, 84-89 m, 2 dd.

**Distribution.** Bahía de Campeche, southwestern Gulf of Mexico, 73-108 m.

**Description.** Holotype 5.5 mm in length, strong, smooth, glossy, biconic (width/length ratio 0.56) (Figs 27-29). Spire less than one-quarter length of shell from edge of shoulder to apex. Protoconch dome-shaped, grayish-white, semi-translucent; remainder of shell old-ivory in coloration, with two rather wide, diffused, pale-yellow bands located at shoulder and near anterior one-third of whorl; posterior band showing on two early teleoconch whorls; irregular yellowish markings present between spiral bands. Last whorl developing a conspicuous lateral bulge at shoulder, just behind posterior end of labrum; bulge at periphery extending beyond edge of labrum. External varix milky-white, dorso-ventrally narrower anteriorly (Fig. 29), extending laterally from body of whorl, creating a plait at junction with main body of shell (Fig. 28), posteriorly joining shoulder bulge, widening dorso-ventrally (Fig. 28), diminishing in lateral thickness, noticeable only by its milky-white coloration (Fig. 28). Inner lip thick, smooth, sinuous. Aperture less than three-quarters length of shell, posteriorly narrowed by labral sinuosity and posterior bulging of parietal wall; widening anteriorly. Columella weakly concave, with four strong plications occupying slightly more than half of aperture; posterior-most plication almost perpendicular to parietal wall; plications becoming more angular

anteriorly; last two plications joining, but not fusing, at anterior end; last plication strongest, becoming an erect ridge when viewed laterally (Fig. 29), delimiting anterior canal, white coloration of plication continuing around edge of anterior canal to join external varix.

**Discussion.** The relatively large size and markings of *Dentimargo gibbus* separate it from most of its western Atlantic congeners. *Dentimargo aureocincta* (Stearns, 1872) (Fig. 45) and some forms of *D. eburneolus* (Conrad, 1834) (Fig. 46) have a banded pattern but these two species are easily differentiated from *D. gibbus* by their higher spire and the presence of labial denticles. *Dentimargo claro*i Espinosa & Ortea, 2004, a shallow water species from southern Cuba, is smaller, and has different coloration and shell structure. *Dentimargo hennequini* Cossignani, 2004, is the most similar to the new species in general proportions and markings (Figs 47-48); however, *D. gibbus* has a conspicuous lateral bulge at shoulder, has a different structure of the external varix, and pale-yellow bands on an old-ivory background instead of the maroon bands on a white background of *D. hennequini*.

All of the paratype material (Figs 30-43) retain the characters of the holotype (Figs 27-29). A single specimen of *Dentimargo hennequini*, agreeing in all characters with the description of that taxon, was dredged in shallower waters in the vicinity of the type locality of the new species (Figs 47-48).

Although the new species has been placed in the genus *Dentimargo*, it also shares a few characters with some members of the genus *Primum*, such as the pronounced bulge in the last whorl, as has been pointed out by Andrew Wakefield (pers. comm.). Definitive placement of this new species will only be possible when the two genera become better understood

**Etymology.** From the Latin *gibbus* (adjective, meaning humped) to denote the most salient character of the new species.

#### Family CYSTISCIDAE

Subfamily PERSICULINAE G. A. & H. K. Covert, 1995

Genus *Canalispira* Jousseaume, 1875

Type species: *Canalispira olivellaeformis* Jousseaume, 1875, by monotypy.

#### *Canalispira aurea* n. sp.

Figs 49-55

**Type material.** Holotype ANSP 413508; length 5.2 mm, width 2.7 mm (Figs 49-52), paratype 1 EFG 26777 (Figs 53-54), paratype 2 UNAM (Fig. 55).

**Type locality.** Mexico, Bahía de Campeche, 20°52.40'N, 92°24.83'W, 77-81 m.

**Material examined.** Mexico. NSF.II: sta. 35, 20°52.40'N, 92°24.83'W, 77-81 m, 3 dd.

**Distribution.** Bahía de Campeche, southwestern Gulf of Mexico, 77-81 m.

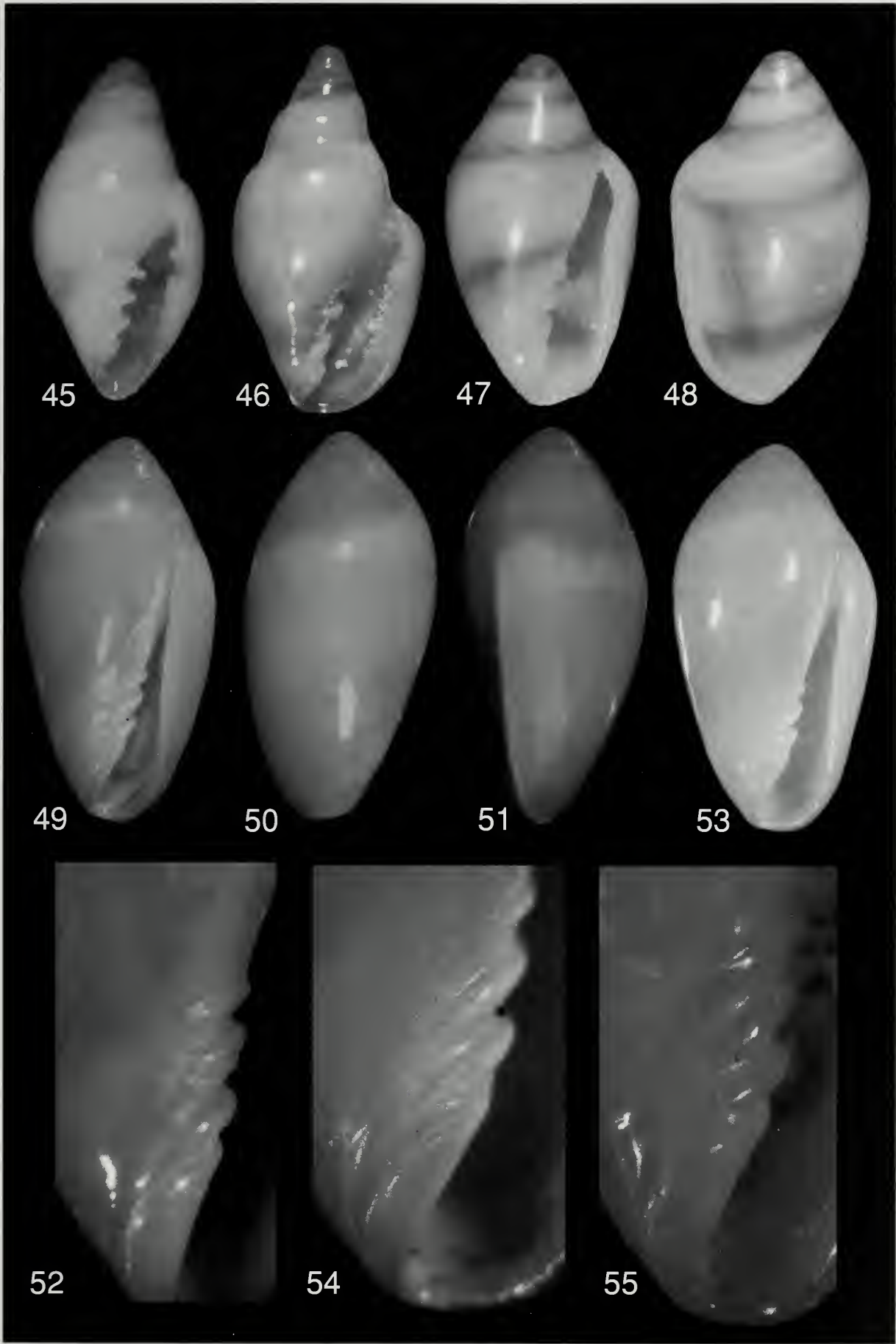
**Description.** Holotype 5.2 mm in length, thick, opaque, conically oblong (width/ length ratio 0.52) (Figs 49-52), almost perfectly tubular (2.6 mm in width vs. 2.5 mm in height) (Fig. 51). Protoconch paucispiral, wide, dome-shaped, semi-translucent, yellowish white. Remainder of shell orange, with uneven, thin, white band at shoulder, band showing on two earlier whorls; coloration continuing uninterrupted to edge of labrum; edge of labrum white when viewed ventrally, tinged with orange at posterior and anterior end; anterior ventral portion of shell white, starting at level of posterior columellar plication. External varix inconspicuous, showing as slight thickening of lip at anterior half of whorl. Inner side of lip thick, smooth, sinuous. Aperture narrow posteriorly, beginning to widen at level of posterior columellar plication. Columella with four oblique plications, starting about midway on parietal wall; posterior plication weakest, narrowest; next plication twice as thick, bifid (Fig. 52); last two plications of same strength when viewed ventrally; last plication standing out when viewed laterally (Fig. 51). Paratypes show thin, narrow parietal glaze starting at beginning of posterior canal; width of glaze expanding anteriorly; glaze thickening behind anterior plication, creating a callus (Figs 54-55).

**Discussion.** Paratype 1 (Figs 53-54) shows the color pattern of the holotype, as well as a bifid second plication, in spite of the fact that the plications are somewhat eroded. Paratype 2 is faded to a very pale yellow instead of orange, but otherwise conforms to the coloring of the other two specimens. It also has a

#### Figures 45-55

**45.** *Dentimargo aureocincta* (Stearns, 1872), Mexico, Bahía de Campeche, 22°16.28'N, 91°30.42'W, 107-108 m, 4 mm, EFG 26348. **46.** *Dentimargo eburneolus* (Conrad, 1834), Mexico, Bahía de Campeche, 22°15.12'N, 90°41.63'W, 51-56 m, 6 mm, EFG 26078. **47-48.** *Dentimargo hennequini* Cossignani, 2005, Mexico, Bahía de Campeche, 22°15.12'N, 90°41.63'W, 51-56 m, 5 mm, EFG 26353. **49-55.** *Canalispira aurea* n. sp., Mexico, Bahía de Campeche, 20°52.40'N, 92°24.83'W, 77-81 m. **49-52.** Holotype ANSP 413508, 5.2 x 2.7 mm. **53-54.** Paratype 1, 5 mm, EFG 26777. **55.** Paratype 2, UNAM, 5 mm. Columellar plications.





bifid second plication; however, the other two plications also show minor irregularities (Fig. 55). It is presumed that the color, shape, and irregular plications are diagnostic of the species. It is also presumed that older specimens will have a glaze-callus pattern like those shown by the paratypes.

Although it lacks the channeled suture of Indo-Pacific *Canalispira*, a similar columellar structure and, more importantly, the deeply channeled posterior notch, places this new species closest to *Canalispira*. There are two western Atlantic species assigned to *Canalispira*: *C. hoffi* (Moolenbeek & Faber, 1991) and *C. minor* (Dall, 1927). *Canalispira hoffi*, from the Lesser Antilles, is much smaller than the new species, reaching only 3.8 mm in length, and has a very different color pattern. *C. minor*, from very deep water off Fernandina, Georgia, is white, larger, and has only 3 columellar plaits.

*Canalispira aurea* can be confused with a number of western Atlantic species in the genus *Volvarina*: *Volvarina mexicana* (Jousseaume, 1875) grows larger, is more cylindrical, has thinner walls, is banded, and has a different columellar structure. *Volvarina splendida* Cossignani, 2005, from northern Yucatan, is more slender, not as heavy, has a pattern of brown bands, and a different columellar structure. *Volvarina jaguanensis* Espinosa & Ortea, 1998, from southern Cuba, is smaller, and has a different shape and color pattern. *Volvarina pepefragai* Espinosa & Ortea, 1997, from western Cuba, is larger, and has a different coloration and apertural characters. *Volvarina styria* (Dall, 1889) is white, more slender, glassy, and has a higher spire. *Volvarina serrei* (Bavay, 1913), a variable Brazilian species, has not yet been found in the Caribbean (Boyer, 2000:41). It grows to a larger size, does not have the shape of the new species, and has a different columellar structure.

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